

Appl. No. 10/608,680
Reply to Office action of 10/01/2004

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Original): A flow control device for controlling the flow rate through tubing placed in an oil well, the tubing including at least one hole therethrough, the device comprising:
 - a closure sleeve adapted to slide over the tubing hole, the closure sleeve having a front edge having a wave-like surface;
 - one or more seals mounted downstream of the tubing hole, the one or more seals cooperating in a fluid-tight manner with the closure sleeve;
 - a protective sleeve mounted in alignment with the closure sleeve and proximate to the one or more seals, the protective sleeve having a top edge adapted for mating engagement with the wave-like surface of the front edge of the closure sleeve; and
 - a return mechanism for automatically returning the protective sleeve to a covering position in which the protective sleeve covers the first seal when the first seal is not covered by the closure sleeve.
2. (Original): A device according to claim 1, wherein the return mechanism comprises a spring interposed between the tubing and the protective sleeve.

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3. (Original): A device according to claim 2, wherein the closure sleeve is mounted on the outside of the tubing; and the spring is mounted on the outside of the tubing between the protective sleeve and a shoulder defined on the tubing.
4. (Original): A device according to claim 3, wherein a cover is placed around the spring.
5. (Original): A device according to claim 4, wherein the protective sleeve, the spring, and the cover form an assembly adapted to be mounted as a single unit on the tubing.
6. (Canceled)
7. (Original): A device according to claim 1, wherein the closure sleeve is adapted to move between a closure position, in which the closure sleeve covers the one or more seals, and a controlled opening position, in which a front edge of the closure sleeve cooperates with the tubing hole to form a through hole of variable section.
8. (Currently amended): A device according to claim 7, wherein: the protective sleeve occupies the covering position as long as the closure sleeve occupies the controlled opening position; the front edge of the closure sleeve is adapted to engage a top edge of the protective sleeve while the closure sleeve is moving towards its closure position; so that the one or more seals are always substantially covered [[fully]] by at least one of the closure sleeve and the protective sleeve.

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9. (Original): A device according to claim 1, wherein the closure sleeve is mounted on an outer surface of the tubing.

10. (Currently amended): A flow control device for controlling the flow rate through tubing placed in an oil well, the tubing including at least one hole therethrough, the device comprising:

a closure sleeve adapted to slide over the tubing hole;

one or more seals mounted downstream of the tubing hole, the one or more seals

cooperating in a fluid-tight manner with the closure sleeve, the one or more seals

having a wave-like geometry;

a protective sleeve mounted in alignment with the closure sleeve and proximate to the

one or more seals; and

a return mechanism for automatically returning the protective sleeve to a covering

position in which the protective sleeve covers the one or more seals when the one

or more seals are not covered by the closure sleeve[.];

wherein the wave-like geometry of the one or more seals prevents the total alignment of

the one or more seals with an interface between the closure sleeve and the

protective sleeve.

11. (Original): A device according to claim 10, wherein the return mechanism comprises a spring interposed between the tubing and the protective sleeve.

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12. (Original): A device according to claim 11, wherein the closure sleeve is mounted on the outside of the tubing; and the spring is mounted on the outside of the tubing between the protective sleeve and a shoulder defined on the tubing.

13. (Original): A device according to claim 12, wherein a cover is placed around the spring.

14. (Original): A device according to claim 13, wherein the protective sleeve, the spring, and the cover form an assembly adapted to be mounted as a single unit on the tubing.

15. (Canceled)

16. (Original): A device according to claim 10, wherein the closure sleeve is adapted to move between a closure position, in which the closure sleeve covers the one or more seals, and a controlled opening position, in which a front edge of the closure sleeve cooperates with the tubing hole to form a through hole of variable section.

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17. (Currently amended): A device according to claim 16, wherein: the protective sleeve occupies the covering position as long as the closure sleeve occupies the controlled opening position; the front edge of the closure sleeve is adapted to engage a top edge of the protective sleeve while the closure sleeve is moving towards its closure position; so that the one or more seals are always substantially covered ~~[[fully]]~~ by at least one of the closure sleeve and the protective sleeve.
18. (Original): A device according to claim 10, wherein the closure sleeve is mounted on an outer surface of the tubing.

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19. (Original): A well completion, comprising:
- a tubing including at least one hole therethrough;
 - a closure sleeve adapted to slide over the tubing hole, the closure sleeve having a wave-like front edge;
 - one or more seals mounted on the tubing downhole of the tubing hole, the one or more seals cooperating in a fluid-tight manner with the closure sleeve;
 - a protective sleeve mounted in alignment with the closure sleeve and proximate to the one or more seals, the protective sleeve having a top edge adapted for mating engagement with the front edge of the closure sleeve; and
 - a return mechanism for automatically returning the protective sleeve to a covering position in which the protective sleeve covers the one or more seals when the one or more seals are not covered by the closure sleeve.

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20. (Currently amended): A well completion, comprising:
- a tubing including at least one hole therethrough;
 - a closure sleeve adapted to slide over the tubing hole;
 - one or more seals mounted downstream of the tubing hole, the one or more seals cooperating in a fluid-tight manner with the closure sleeve, the one or more seals having a wave-like geometry;
 - a protective sleeve mounted in alignment with the closure sleeve and proximate to the one or more seals; and
 - a return mechanism for automatically returning the protective sleeve to a covering position in which the protective sleeve covers the one or more seals when the one or more seals are not covered by the closure sleeve[.];
- wherein the wave-like geometry of the one or more seals prevents the total alignment of the one or more seals with an interface between the closure sleeve and the protective sleeve.
21. (New): A device according to claim 10, wherein:
- the closure sleeve includes a front edge having a wave-like surface; and
 - the protective sleeve includes a top edge adapted for mating engagement with the wave-like surface of the front edge of the closure sleeve.

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22. (New): A device according to claim 20, wherein:
- the closure sleeve includes a front edge having a wave-like surface; and
 - the protective sleeve includes a top edge adapted for mating engagement with the wave-like surface of the front edge of the closure sleeve.